Lab Program 1

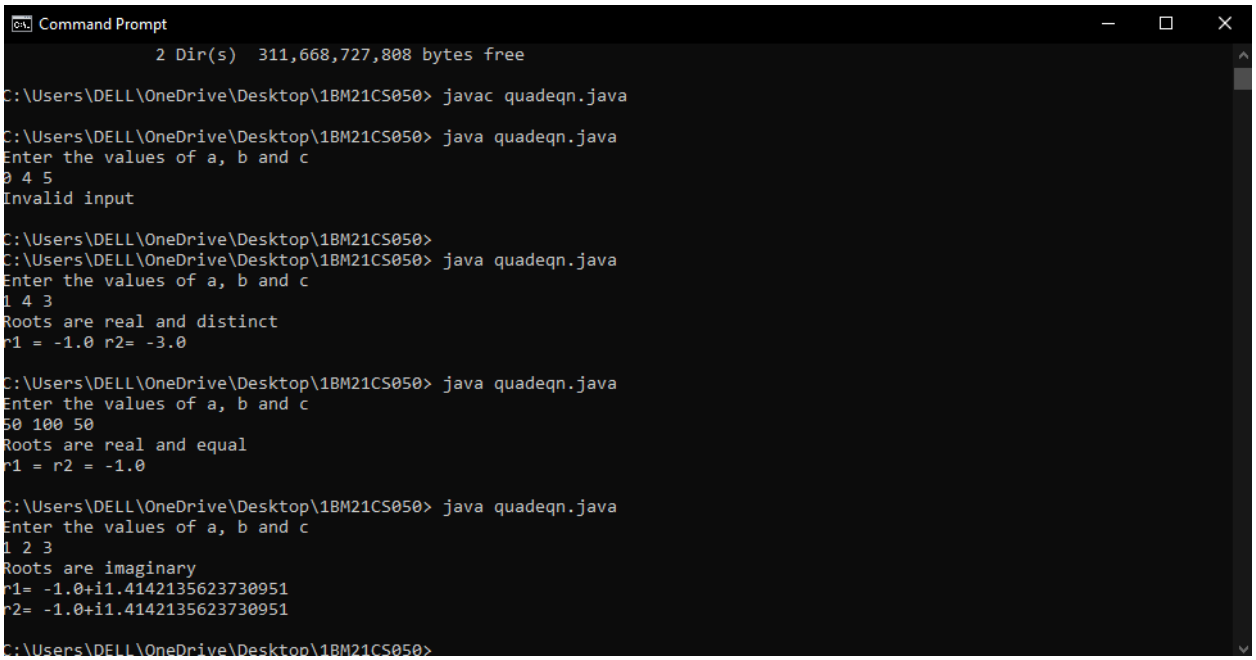
Develop a Java program that prints all real solutions of quadratic equation ax^2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

```
import java.util.*;
import java.util.Scanner;
class quadeqn
{
  public static void main(String ss[])
  {
     double d;
     int a,b,c;
     Scanner s = new Scanner(System.in);
     System.out.println("Enter the values of a, b and c");
      a=s.nextInt();
      b=s.nextInt();
      c=s.nextInt();
     d= (b*b)-(4*a*c);
     if (a==0)
    {
      System.out.println("Invalid input");
     }
     else if(d>0)
     {
         double r1=(-b+Math.pow(d,0.5))/(2*a);
         double r2=(-b-Math.pow(d,0.5))/(2*a);
         System.out.println("Roots are real and distinct");
         System.out.println("r1 = "+r1 +" " + "r2= "+r2);

      }
      else if(d==0.0)
      {
         double r1 = -b/(2*a);
         System.out.println("Roots are real and equal");
         System.out.println("r1 = r2 = "+r1);
      }
       else if(d<0)
       {
         System.out.println("Roots are imaginary ");
```

```
                    double real = -b/2*a;
                    double img = (Math.sqrt(Math.abs(d)))/(2*a);
        System.out.println("r1= " +real+"+i"+img);
        System.out.println("r2= " +real+"+i"+img);

      }
    }
}
```



Date 19/11/22

Program 1

Develop a JAVA program to print all real solutions of quad. equations $ax^2+bx+c=0$.

```
import java.util.*;
import java.util.Scanner;
public class quadeqn
{
  public static void main(String ss[])
  {
    Scanner s = new Scanner(System.in);
    System.out.println("Enter the values of
                        a, b and c");
    int a = s.nextInt();
    int b = s.nextInt();
    int c = s.nextInt();
    double d = (b*b)-(4*a*c);
    if (d>0)
    {
      double r1 = (-b+Math.pow(d,0.5))/(2*a);
      double r2 = (-b-Math.pow(d,0.5))/(2*a);
      System.out.println("Roots are real and
                          distinct. r1 = "+r1+" r2 = "+r2);
    }
    else if (d==0.0)
    {
      double r1 = -b/(2*a);
      System.out.println("Roots are real and
                          equal r1 = r2 = "+r1);
    }
    else
      System.out.println("Roots are not real");
      double r = -b/(2*a)
      double img = Math.sqrt(Math.abs(d))/(2*a);
      System.out.println("r1 = "+r+"i"+img);
      System.out.println("r2 = "+r+"i"+img);
  }
}
```

Date ___/___/_____

```
Enter the values of a, b and c
0 4 5
Invalid input

Enter the values of a, b and c
1 4 3
Roots are real and distinct
r1 = -1.0    r2 = -3.0

Enter the values of a, b and c
50 100 50
Roots are real and equal
r1 = r2 = -1.0

Enter the values of a, b and c
1 2 3
Roots are imaginary
r1 = -1.0+1.4142    r2 = -1-1.4142
```